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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/653,921	09/04/2003	Gary R. Pickrell	01640334AA	3781
30743	7590	09/21/2005	EXAMINER	
WHITHAM, CURTIS & CHRISTOFFERSON, P.C. 11491 SUNSET HILLS ROAD SUITE 340 RESTON, VA 20190			CHIEM, DINH D	
		ART UNIT	PAPER NUMBER	
		2883		

DATE MAILED: 09/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/653,921	PICKRELL ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Erin D. Chiem	2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 15 July 2005.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-14 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |  |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)              |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____.  |

## **DETAILED ACTION**

This office action is in response to Applicant's amendment filed on July 7, 2005.

Independent claims 1 and 8 are amended and currently claims 1-14 are pending.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4, 5, 7, 8, 11, 12, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Brogardh et al. (US 4,581,530). Brogardh teaches a fiber optic sensor (Fig. 1 – 4b) comprising a tubular body 2 of crystalline material (col. 4, lines 39-52), a fiber optic element having an end surface 6 being bonded to the body of monocrystalline material (col. 4, lines 49-53), and a reflective diaphragm 4 positioned by the body 2 (col. 3, lines 8-17) at a location separated from the end surface of the fiber optic element to form a gap which varies in length in response to the change in pressure, the condition of interest (col. 3, line 61- col. 4, lines 5).

Regarding the amended limitations of the *--body of crystalline material being resistant to persistent dimensional changes in response to stress applied thereto for an extended period* – this limitation is functional language having no structure distinction. Furthermore, according to Applicant's disclosure on page 12, lines 13-31, the Applicant is reciting the inherent characteristics of monocrystallines and on lines 32-33; the Applicant acquiesced that any

monocrystallines that possess the above-mentioned characteristics will suffice as the material make-up of the body. Thus, Brogardh's monocrystalline body 2 meets the functional limitation.

Regarding the limitation wherein the --*sensor is resistant to measurement drift under conditions of stress applied for an extended period*--again, this limitation is merely functional and does not contain structural distinctness over Brogardh.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 3, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brogardh in view of Wang (US Patent 5,963,321).

Brogardh teaches a fiber optic sensor (Fig. 1 – 4b) comprising a tubular body 2 of crystalline material (col. 4, lines 39-52), a fiber optic element having an end surface 6 being bonded to the body of monocrystalline material (col. 4, lines 49-53), and a reflective diaphragm 4 positioned by the body 2 (col. 3, lines 8-17) at a location separated from the end surface of the fiber optic element to form a gap which varies in length in response to the change in pressure, the condition of interest (col. 3, line 61- col. 4, lines 5).

However, Brogardh does not teach having the thermal expansion coefficient (CTE) of the crystalline body matches the CTE of the fiber optic element and Brogardh does not teach maximizing the difference between the CTE of the crystalline body and the fiber optic element.

Wang teaches a self-calibrating optical pressure and temperature sensor wherein the application of the sensor is dependent on the matching or differing of the CTE of the fiber optic element and the sleeve, or more generally known as the body in the present application. By matching the CTE of the fiber optic element and the body, the sensor may be used as a pressure sensor. Conversely, by maximizing the CTE difference between the fiber optic element and the body, the sensor is used for measuring temperature (col. 8, lines 58-67 and col. 9, lines 14-28).

Since Brogardh and Wang are both from the same field of endeavor, the purpose disclosed by Wang would have been recognized in the pertinent art of Brogardh.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to matching or differs the CTE of the optical fiber and the body during manufacturing process. The motivation for matching or differing the CTE of the fiber optic element and the body is to compensate the two dependent parameters, temperature and pressure, such that the desired parameter, temperature and pressure, is isolated.

Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brogardh in view of Wlodarczyk (US Patent 4,932,263).

Brogardh teaches a fiber optic sensor (Fig. 1 – 4b) comprising a tubular body 2 of crystalline material (col. 4, lines 39-52), a fiber optic element having an end surface 6 being bonded to the body of monocrystalline material (col. 4, lines 49-53), and a reflective diaphragm 4 positioned by the body 2 (col. 3, lines 8-17) at a location separated from the end surface of the fiber optic element to form a gap which varies in length in response to the change in pressure, the condition of interest (col. 3, line 61- col. 4, lines 5).

However, Brogardh does not disclose the monocrystalline body is a substantially planar substrate having a groove in a surface thereof.

Wlodarczyk discloses a temperature compensated fiber optic pressure sensor wherein the optical fiber is coupled to a planar monocrystalline body having a v-groove to hold the fiber in place for the purpose of integrating the sensor into a semiconductor device that is small enough to be attached on the test subject and detect the pressure difference.

Since Brogardh and Wlodarczyk are both from the same field of endeavor, the purpose disclosed by Wlodarczyk would have been recognized in the pertinent art of Wlodarczyk.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art for Brogardh to form the crystalline body into a planar surface having a v-groove to align, hold, and couple the to the crystalline body. The motivation for holding the fiber within the v-groove is to form a miniaturized integrated semiconductor pressure sensor such that the sensor may be easily applied to the test subject and detect the pressure difference.

*Response to Arguments*

4. Applicant's arguments with respect to claims 1-24 have been considered but are moot in view of the new ground(s) of rejection.

*Conclusion*

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior arts in the Notice of Reference Cited are all pertained to various pressure

and temperature sensors utilizing crystalline body to combat viscous flow and test the measuring parameter and recalibrate to "resist" drift.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erin D. Chiem whose telephone number is (571) 272-3102. The examiner can normally be reached on Monday - Thursday 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (571) 272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Erin D Chiem  
Examiner  
Art Unit 2883

Frank G. Font  
Supervisory Primary Examiner  
Technology Center 2800